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10/612,753	07/01/2003	Bruce Gregory Warren	491442011600	5558

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EMULEX DESIGN & MANUFACTURING CORPORATION
C/O MORRISON & FOERSTER LLP
555 WEST FIFTH STREET, SUITE 3500
LOS ANGELES, CA 90013

EXAMINER	
RUSSELL, WANDA Z	

ART UNIT	PAPER NUMBER
2416	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/612,753	WARREN ET AL.	
	Examiner	Art Unit	
	WANDA Z. RUSSELL	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 October 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 1 and 2** are rejected under 35 U.S.C. 103(a) as being unpatentable over Black et al. (U.S. Patent 6,614,796 B1), in view of Anderson et al. (U.S. Patent 6,898,184 B1).

For **claim 1**, Black et al. teach a Fibre Channel Arbitrated Loop (see Title) interconnect system (Fibre Channel networks emerged as a family of interconnection topologies, see col. 1, lines 29-30) comprising:

a first port (see 108-Fig. 4, or 124-Fig. 5),

a second port (see 110-Fig. 4, or 126-Fig. 5),

the first and second ports including port logic (port ,,, logic, see col. 8, lines 8-14) to monitor certain arbitrated loop primitives (ports ... primitives, see col. 14, line 62 - col. 15, line 4),

a crossbar switch coupled to the first and second ports (see 100-Fig. 4), and

a route determination apparatus (see FCAL switch-Fig. 4, or 136-Fig. 5) including a centralized routing table (see 127-Fig. 4. It can be seen that the routing table is centralized in Fig. 4), the centralized routing table directly coupled to each port and the crossbar switch (from Figs. 4 and 5, it can be seen that both point-to-point connection

and centralized connection exist. It is obvious to one skilled in the art either one can be adopted or modified for the communication between two devices. One would have an expected result of allowing individual transmission as necessary for operation. One evidence is U.S. patent 4,678,708. See Fig. 4, and col. 5, lines 55-65. The motivation of design choice is apparent to those skilled in the art),

wherein the crossbar switch creates paths between the ports based on arbitrated loop primitives (Such networks use a unique protocol involving a plurality of 40 bit primitives that are used to arbitrate for loop control, to establish connections and to carry out flow control for data transfers of frames of data, see col. 1, lines 17-20).

However, Black et al. fails to specifically teach the routing table consisting of ALPA addresses and their associated ports, and the centralized routing table initialized with a device discovery process during loop initialization.

Anderson et al. teach the routing table consisting of ALPA addresses (see col. 13, line 50) and their associated ports (see col. 13, line 51), and the centralized routing table initialized with a device discovery process during loop initialization (see col. 13, lines 48-52).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Black et al. with Anderson et al. to obtain the invention for improving the routing process by efficiently and uniquely address each node within the arbitrated loop.

For **claim 2**, Black et al. and Anderson et al. teach everything claimed as applied above (see claim 1). In addition, Black et al. teach the interconnect system of claim 1

whereby the arbitrated loop primitives that cause the crossbar switch to create paths between ports includes one or more of the following: ARB, OPN and CLS (see col. 2, line 2).

3. **Claims 3-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Black et al. (U.S. Patent 6,614,796 B1), and further in view of Global Engineering ("Fibre Channel Arbitrated Loop" from IDS), and Anderson et al. (U.S. Patent 6,898,184 B1).

For **claim 3**, Black et al. teach a Fibre Channel arbitrated loop (Title) interconnect system (see col. 1, line 29-30), the interconnect system including:

a first port (see 124-Fig. 5) containing port logic (see col. 8, lines 8-14) coupled to the first Arbitrated Loop (see Fig. 4, FCAL is Loop Switch),

a second port (see 126-Fig. 5) containing port logic (see col. 8, lines 8-14) coupled to the second Arbitrated Loop (see Fig. 4, FCAL is Loop Switch),

route determination apparatus including a centralized routing table (see 127-Fig. 4. It can be seen that the routing table is centralized in Fig. 4) directly coupled to the first and second ports for selecting a route between ports (from Figs. 4 and 5, it can be seen that both point-to-point connection and centralized connection exist. It is obvious to one skilled in the art either one can be adopted or modified for the communication between two devices. One would have an expected result of allowing individual transmission as necessary for operation. One evidence is U.S. patent 4,678,708. See Fig. 4, and col. 5, lines 55-65. The motivation of design choice is apparent to those skilled in the art), the centralized routing table selecting routes based on received Fibre Channel Arbitrated

Loop primitives from the ports (Such networks use a unique protocol involving a plurality of 40 bit primitives that are used to arbitrate for loop control, to establish connections and to carry out flow control for data transfers of frames of data, see col. 1, lines 17-20),

connectivity apparatus coupled to the first and second ports and to the route determination apparatus directly (see crossbar switch in Figs. 4 and 5. From Figs. 4 and 5, it can be seen that both point-to-point connection and centralized connection exist. It is obvious to one skilled in the art either one can be adopted or modified for the communication between two devices) for switching frames between ports under control of the route determination apparatus (establish connections and to carry out flow control for data transfers of frames of data, see col. 1, lines 17-20),

wherein the connectivity apparatus is a crossbar switch (see Fig. 4 and 5), and

wherein Fibre Channel frames (see col. 1, line 20) are transferred between a device on the first Arbitrated Loop and the second Arbitrated Loop Device (source and destination, see col. 1, lines 20-27).

However, Black et al. fails to specifically teach a system for interconnecting Fibre channel Arbitrated Loop devices comprising: a first Arbitrated Loop containing one or more Fibre Channel arbitrated loop devices, and a second Arbitrated Loop Device, and ALPA addresses and the centralized routing table initialized with a device discovery process during loop initialization.

Global Engineering teaches

a system (see Fig. J.1, P. 122) for interconnecting Fibre channel Arbitrated Loop devices (see Fig. J.1, P. 122) comprising:

a first Arbitrated Loop containing one or more Fibre Channel arbitrated loop devices (see right side of Fig. J.1, P. 122 with the fabric element),

a second Arbitrated Loop see (right side of Fig. J.1, P. 122 with the second Fabric Element-Fig. J.1, P. 122).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Black et al. with Global Engineering to obtain the invention as specified in claim 3 for supporting more users.

Further, Black et al. in view of Global Engineering do not teach ALPA addressed and the centralized routing table initialized with a device discovery process during loop initialization.

Anderson et al. teach ALPA addresses (see col. 13, line 50) and the centralized routing table initialized with a device discovery process during loop initialization (see col. 13, lines 48-52).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Black et al. with Anderson et al., and Global Engineering to obtain the invention as specified in claim 3 for supporting more users for the system and improving the routing process by efficiently and uniquely address each node within the arbitrated loop.

For **claim 4**, Black et al., Anderson et al. and Global Engineering teach everything claimed as applied above (see claim 3). In addition, Black et al. teach the interconnect system of claim 3 whereby the arbitrated loop primitives that cause the

crossbar switch to create paths between ports includes one or more of the following: ARB, OPN and CLS (see col. 2, line 2).

For **claim 5**, Black et al., Anderson et al. and Global Engineering teach everything claimed as applied above (see claim 3). In addition, Black et al. teach the interconnect system of claim 3 including a R_RDY (see col. 1, line 26) counter to count R_RDY's before the OPN response is received by the originating Fibre Channel Arbitrated Loop Device that is connected to the interconnect system (see col. 1, lines 24-26).

For **claim 6**, Black et al. teach a system (FCAL nets, see col. 10, line 22) for interconnecting Fibre Channel Arbitrated Loop devices (see Fig. 4) comprising:

a first Fibre Channel Arbitrated Loop Switch (see Fig. 4, and col. 10, line 22. More nets can use more switches),

a second Fibre Channel Arbitrated Loop Switch (see Fig. 4, and col. 10, line 22), the first and second Fibre Channel Arbitrated Loop Switches including port logic (see col. 8, lines 8-14), connectivity apparatus (see 102, 104, 106-Fig. 4) and route determination logic including a centralized routing table (see 127-Fig. 4), the route determination logic directly coupled to the port logic and the connectivity apparatus (from Figs. 4 and 5, it can be seen that both point-to-point connection and centralized connection exist. It is obvious to one skilled in the art either one can be adopted or modified for the communication between two devices. One would have an expected result of allowing individual transmission as necessary for operation. One evidence is

U.S. patent 4,678,708. See Fig. 4, and col. 5, lines 55-65. The motivation of design choice is apparent to those skilled in the art), and

a route determination logic creating routes based on the receipt of certain arbitrated Loop primitives (see col. 1, lines 17-20),

wherein the first and second loop switches are interconnected by two or more Fibre Channel Arbitrated Loop links (see col. 2, line 60, and col. 10, line 22. With more nets, it is obvious that there are more links) and transfer frames on both ports (see col. 1, line 20).

However, Black et al. fail to specifically teach a system for interconnecting Fibre channel Arbitrated Loop devices comprising: a first Arbitrated Loop containing one or more Fibre Channel arbitrated loop devices, and a second Arbitrated Loop Device, and the centralized routing table initialized with a device discovery process during loop initialization.

Global Engineering teaches a system (see Fig. J.1, P. 122) for interconnecting Fibre channel Arbitrated Loop devices (see Fig. J.1, P. 122) comprising:

a first Fibre Channel Arbitrated loop switch (see X-Fig. Q. 1, P. 132),

a second Fibre Channel Arbitrated loop switch (see Y-Fig. Q. 1, P. 132).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Black et al. with Global Engineering to obtain the invention as specified in claim 3 for supporting more users.

Further, Black et al. in view of Global Engineering do not teach ALPA addressed and the centralized routing table initialized with a device discovery process during loop initialization.

Anderson et al. teach ALPA addresses (see col. 13, line 50) and the centralized routing table initialized with a device discovery process during loop initialization (see col. 13, lines 48-52).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Black et al. with Anderson et al., and Global Engineering to obtain the invention for supporting more users for the system and improving the routing process by efficiently and uniquely address each node within the arbitrated loop.

For **claim 7**, Black et al. teach a system comprising:

a plurality of Fibre Channel Arbitrated Loop ports (see 108, 110-Fig. 4) each including port logic (see col. 8, lines 8-14),

a route determination apparatus (see FCAL switch-Fig. 4, or 136-Fig. 5) comprising a centralized routing table (see 127-Fig. 4),

a crossbar switch (see 100-Fig. 4) adapted to connect the Fibre Channel Arbitrated Loop ports based on the receipt of certain Fibre Channel Arbitrated Loop primitives (see col. 1, lines 17-20),

wherein a LIP received on the first port is selectively propagated to one or more of the ports (see col. 42, lines 14-18), and

wherein the centralized routing table is directly coupled to the plurality of ports and the crossbar switch (from Figs. 4 and 5, it can be seen that both point-to-point connection and centralized connection exist. It is obvious to one skilled in the art either one can be adopted or modified for the communication between two devices. One would have an expected result of allowing individual transmission as necessary for operation. One evidence is U.S. patent 4,678,708. See Fig. 4, and col. 5, lines 55-65. The motivation of design choice is apparent to those skilled in the art).

However, Black et al. fail to specifically teach a system for interconnecting Fibre channel Arbitrated Loop devices, and the centralized routing table initialized with a device discovery process during loop initialization.

Global Engineering teaches a system (see Fig. J.1, P. 122) for interconnecting Fibre channel Arbitrated Loop devices (see Fig. J.1, P. 122).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Black et al. with Global Engineering to obtain the invention as specified in claim 3 for supporting more users.

Further, Black et al. in view of Global Engineering do not teach the centralized routing table initialized with a device discovery process during loop initialization.

Anderson et al. teach the centralized routing table initialized with a device discovery process during loop initialization (see col. 13, lines 48-52).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Black et al. with Anderson et al., and Global Engineering to obtain the invention for supporting more users for the system and

improving the routing process by efficiently and uniquely address each node within the arbitrated loop.

For **claim 8**, Black et al. teach a system comprising:

a plurality of Fibre Channel Arbitrated Loop ports (see 108, 110-Fig. 4) each including port logic (see col. 8, lines 8-14),

a route determination apparatus (see FCAL switch-Fig. 4, or 136-Fig. 5) comprising a centralized routing table (see 127-Fig. 4),

a connectivity apparatus (see crossbar switch in Figs. 4 and 5), and

logic (see col. 8, line 14) implementing predefined loop control criteria to enforce fairness (see col. 8, lines 8-14),

wherein the route determination apparatus is directly coupled to the plurality of ports and the connectivity apparatus (from Figs. 4 and 5, it can be seen that both point-to-point connection and centralized connection exist. It is obvious to one skilled in the art either one can be adopted or modified for the communication between two devices. One would have an expected result of allowing individual transmission as necessary for operation. One evidence is U.S. patent 4,678,708. See Fig. 4, and col. 5, lines 55-65. The motivation of design choice is apparent to those skilled in the art).

However, Black et al. fail to specifically teach a system for interconnecting Fibre channel Arbitrated Loop devices, and the routing table initialized with a device discovery process during loop initialization.

Global Engineering teaches a system (see Fig. J.1, P. 122) for interconnecting Fibre channel Arbitrated Loop devices (see Fig. J.1, P. 122).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Black et al. with Global Engineering to obtain the invention as specified in claim 3 for supporting more users.

Further, Black et al. in view of Global Engineering do not teach the centralized routing table initialized with a device discovery process during loop initialization.

Anderson et al. teach the centralized routing table initialized with a device discovery process during loop initialization (see col. 13, lines 48-52).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Black et al. with Anderson et al., and Global Engineering to obtain the invention for supporting more users for the system and improving the routing process by efficiently and uniquely address each node within the arbitrated loop.

For **claim 9**, Black et al., Anderson et al. and Global Engineering teach everything claimed as applied above (see claim 8). In addition, Black et al. teach a system for interconnecting Fibre Channel Arbitrated Loop Devices of claim 8, wherein the fairness logic serves to limit the number of times a connected device opens another device (see col. 1, line 32, and 29-32).

For **claim 10**, Black et al., Anderson et al. and Global Engineering et al. teach everything claimed as applied above (see claim 8 and 9). In addition, Black et al. teach a system for interconnecting Fibre Channel Arbitrated Loop Devices of claim 9, wherein the fairness logic serves to limit the number of times a connected device sequentially opens another device (see col. 35, lines 21-24).

For **claim 11**, Black et al., Anderson et al. and Global Engineering teach everything claimed as applied above (see claim 8). In addition, Black et al. teach a system for interconnecting Fibre Channel Arbitrated Loop Devices of claim 8, further including a counter to count the number of opens (see col. 44, line 33).

For **claim 12**, Black et al., Anderson et al. and Global Engineering teach everything claimed as applied above (see claim 8 and 11). In addition, Black et al. teach a system for interconnecting Fibre Channel Arbitrated Loop Devices of claim 11, wherein the counter counts sequential opens (see col. 44, lines 45-48).

For **claim 13**, Black et al., Anderson et al. and Global Engineering teach everything claimed as applied above (see claim 8). In addition, Black et al. teach a system for interconnecting Fibre Channel Arbitrated Loop Devices of claim 8, wherein the logic proactively closes a device (see col. 23, line 16).

For **claim 14**, Black et al., Anderson et al. and Global Engineering teach everything claimed as applied above (see claim 8). In addition, Black et al. teach a system for interconnecting Fibre Channel Arbitrated Loop Devices of claim 8, wherein the ports are assigned different access priorities (see col. 7, line 37).

Response to Amendment

4. Applicant's amendment filed 10/1/2008 has been received and considered.

Response to Arguments

5. Applicant's arguments filed 10/1/2008 with respect to claim(s) 1-14 have been considered but they are not persuasive.

6. For all independent claims, Applicant argues that the route table in Fig. 4 of Black et al. is not directly connected to each port, and the crossbar switch in Fig. 5 of Black et al. is not centralized.

In response, the Examiner respectfully disagrees.

From Figs. 4 and 5, it can be seen that both point-to-point connection and centralized connection exist. It is obvious to one skilled in the art either one can be adopted or modified for the communication between two devices. One would have an expected result of allowing individual transmission as necessary for operation. One evidence is U.S. patent 4,678,708. See Fig. 4, and col. 5, lines 55-65. The motivation of design choice is apparent to those skilled in the art.

7. Rejections of dependent claims remain effective. See details above.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WANDA Z. RUSSELL whose telephone number is (571)270-1796. The examiner can normally be reached on Monday-Thursday 9:00-6:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin C. Harper/
Primary Examiner, Art Unit 2416

WZR/Wanda Z Russell/
Examiner, Art Unit 2416